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Oedogonium has grown for a considerable time in distilled water in the light, a transfer to darkness or to a dilute nutrient solution causes a development of zoospores. Resting cells of Haematococcus, kept in darkness for some time, produce swarmspores upon being illuminated or supplied with cane or grape sugar.

FREUND finds the chemical nature of the medium rather than its physical or osmotic character the important consideration in the asexual reproduction. In contrast to this, LIVINGSTON found the osmotic character of the media the main consideration in determing the form of Stigeoclonium.—WM. CROCKER.

Phototropic response.—BLAAUW,[18] working with the seedling of *Avena sativa*, concludes that the intensity of the light, multiplied by the least time of exposure necessary to give a phototropic response, is approximately a constant. The intensities used varied from 0.000439 to 26,520 Hefner candles, and the time of exposure from 13 hr. to 0.001 sec. The product of the exposure in seconds by the intensity in Hefner candles averages about 21 and varies from 16.9 to 26.5. This, of course, hardly looks like a constant; but the variation is attributed to the individual differences of the seedlings. The intensity of the light was measured with a Weber photometer, and the observation of the response was made two hours after the end of the exposure. The author says, "The essential condition for the production of a phototropic curvature is the supply of a definite quantity of radiant energy; whether this quantity be supplied in a very short time or extremely slowly, is a matter of indifference."—WM. CROCKER.

Spraying potatoes.—A recent bulletin[19] summarizes the results of the seventh year's work in the ten year series of potato-spraying experiments begun in New York in 1902. In the ten-year experiments at Geneva, six sprayings increased the yield 39 bushels per acre and three sprayings increased it 29.5 bushels, although both early and late blight were wholly absent and there were but few flea beetles. In fourteen "farmers' business experiments," including 200 acres, the average gain due to spraying was 18.5 bushels per acre; the average total expense of spraying, $4.30 per acre; and the average net profit, $8.53 per acre. In five of the experiments spraying was unprofitable. Eleven "volunteer experimenters" reported gains averaging 66.3 bushels per acre.—F. L. STEVENS.

Alfalfa.—An exceedingly interesting and comprehensive bulletin concerning alfalfa[20] has just appeared from the New York Experiment Station. Among the subjects treated are the following: Varieties grown, uncongenial soil conditions, winter injury, failure of the seed crop, viability of the seed, impure and adulterated seed, fodder, yellow trefoil, weeds. Among the fungous diseases discussed are: Leaf spot, wilt, anthracnose, root-rot and damping off, downy mildew, Ascochyta leaf-spot, Stagnospora leaf-spot, Cercospora leaf-spot, Alternaria disease (?) of seed, frost blisters on leaves, insect enemies, and root-knot; also, as diseases of unknown cause, white spot, yellow top, pitting of the tap-root, and bundle blackening in the tap-root.—F. L. STEVENS.

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[18] WENT, F. A. F. C., On the investigations of Mr. A. H. BLAAUW on the relation between intensity of light and the length of illumination in the phototropic curvatures in seedlings of *Avena sativa*. Reprint from Proc. Kon. Akad. Wetens. Amsterdam, Sept. 26, 1908. pp. 5.

[19] STEWART, F. C., FRENCH, G. T., and SIRRINE, F. A., N. Y. Agric. Exp. Sta. Bull. 311. January, 1909.

[20] STEWART, F. C., FRENCH, G. T., AND WILSON, J. K., Troubles of alfalfa in New York. N. Y. Agric. Exp. Sta. Bull. 305. November, 1908.

Barium and loco.—In a bulletin on loco weeds[21] CRAWFORD says: "The inorganic constituents, especially barium, are responsible for this action, at least in plants collected at Hugo, Colo. Perhaps in other portions of the country other poisonous principles may be found." *Aragallus mollissimus* and *Aragallus Lamberti* were most fully studied, but other species of these genera, as well as various other genera, have been reported as producing loco.—WM. CROCKER.

Protection against heating.—WIESNER holds that the distribution of green tissues into small leaves or finely divided leaves is a mode of protection against overheating by the sun, and adduces observations and experiments in support therefor.[22] This protection is secured by the small size of the parts which expose a relatively large surface for radiation and at the same time permit many light rays to pass them by.—C. R. B.

Balanced solutions.—OSTERHOUT continues his studies upon balanced solutions with plants,[23] reporting that Na ions, by reducing the toxicity of K, NH_4, Mg, and Ca ions, are an important, and in some marine algae an indispensable, protection. He finds that there is no essential difference between plants and animals in this respect.—WM. CROCKER.

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[21] CRAWFORD, A. C., Barium, a cause of the loco-weed disease. Bur. Plant Ind., U. S. Dept. Agric. Bull. 129. pp. 87. 1908.

[22] WIESNER, J., Versuche über die Wärmeverhältnisse kleiner, insbesondere linear geformter, von der Sonne bestrahlter Pflanzenorgane. Ber. Deutsch. Bot. Gesells. **26a:**702–711. 1908.

[23] OSTERHOUT, W. J. V., Die Schutzwirkung des Natriums für Pflanzen. Jahrb. Bot. **46:**121–136. 1908.